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RE: *Level 3 / Qwest Arbitration,* Docket UT-063006

BENCH REQUEST NO. 5:

At pages 21 and 22 of his direct testimony, Mr. Greene provides a calculation of the costs that Qwest would incur on its side of the point of interconnection under the proposal advocated by Level 3.

A. Please specify and breakdown all dollar *costs* in Washington to Level 3 to provide interconnection as advocated by Level 3.

Response dated November 9, 2006
Prepared by:

Mack Greene
Director, Interconnection Services
720-888-3059

1. Based upon our experience with AT&T, Verizon and BellSouth, neither Level 3 nor the interconnecting RBOC incurred actual out-of-pocket expenses to implement Level 3's system of periodically measuring traffic and allocating compensation.

a. Billing Systems: Both Level 3 and each RBOC - AT&T, Verizon and BellSouth – were able to retain existing billing systems without change.

b. Audit: BellSouth, however, audited once. No adjustments were necessary as a result of that audit. In other words, it found that allocating compensation based upon factors generated from periodic traffic studies systems resulted in accurate billing. Level 3's out of pocket expenses were minimal because the billing systems were found complaint. Thus, as the party requesting the audit, BellSouth paid Deliotte and Touche for that audit. As Level 3 routinely meets with and discusses billing issues with the hundreds of carriers with whom it is interconnected, the personnel time invested in this effort was not considered additional. It was, in fact, less work than would have been required to review and reconcile massive volumes of call detail records.

c. Switching: Level 3 was able to maintain its present switching systems without change. We have found that AT&T, Verizon and BellSouth switches – which include Nortel DMS-5, DMS-500, and Lucent 5E and 5ES – are similar to if not the same models and types of switches deployed by Qwest. But neither AT&T, nor Verizon, nor BellSouth have reported that implementing Level 3's use of verifiable factors required them to modify their switches, or associated recording or billing systems.

d. Routing: Level 3 was able to maintain routing of millions of calls without change. Because neither Level 3 nor the interconnecting RBOC's systems required change, neither party incurred additional costs such as implementing new routing or trunking

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requirements. Another way of looking at this is that today Level 3 has the capability to make calls to and receive calls from each RBOCs' end users. Looking at the terminating call flow from a network perspective, it makes no difference where or how a call originates: it always terminates to the number called. Right now, today, Level 3's network is capable of carrying calls to RBOC end users. Thus Level 3 has been able to terminate IXC calls over existing local interconnection trunks in place with other RBOCs without additional cost.

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At pages 21 and 22 of his direct testimony, Mr. Greene provides a calculation of the costs that Qwest would incur on its side of the point of interconnection under the proposal advocated by Level 3.

B. Please specify and breakdown all dollar *costs* in Washington to Level 3 to provide interconnection as advocated by Qwest. Please separately identify any costs that are foregone *revenues*, such as access charges, in your response.

Response dated November 9, 2006
Prepared by:

Mack Greene
Director, Interconnection Services
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1. Introduction

At pages 20-21 of my testimony I refer to a confidential exhibit where, based upon my understanding at the time of Qwest's contract requirements, I calculated the facilities usage costs as well as the per minute access charges on a monthly basis. In order to specify and breakdown all dollar costs of Qwest's network requirements upon Level 3 in Washington, I have broken out all of the non-recurring charge elements separately and totaled them over the 2-year life of the contract. In addition, I've provided the per MOU cost based upon the current numbers in Washington.

In examining the total cost to support Qwest's proposal the analysis starts with today's network in place. In other words, the existing interconnection network is the cost basis, which I consider to be zero because as configured today, Level 3's interconnection network requires no modification. From that basis, the costs of Qwest's proposal are calculated per element, using the costs from Qwest's Interstate access tariffs (because we assume that Qwest would agree this is primarily interstate traffic; if not, then the tariffed costs would likely increase 15-20%) and those from the rate schedule contained in Qwest's currently approved Washington SGAT.

As we understand it, Qwest recommends that the existing LIS trunks get converted to FGD access trunks in order to support the exchange of all traffic. The numbers below represent the cost to convert the network to Qwest's proposal not the cost of actually exchanging traffic. That cost is separately broken out. But before doing these calculations, it must be made clear that Qwest's claims that the costs of its proposal to Level 3 are wrong. They are based on the incorrect and unsupportable assumption that Level 3 would willingly forego the efficiencies of a single network infrastructure to split out portions of our traffic for exchange. As I explain below, this robs Level 3 of basic network efficiencies without justification.

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2. Cost of converting Level 3's facilities

a. Why Build and Kill is Necessary

At bottom, the simple need for network efficiency drives Level 3's desire to keep all traffic on a single interconnection network. So where Qwest says in their testimony that Level 3 can carve out pieces of its network to FGD but leave the LIS trunks in place, Qwest is actually driving additional cost into Level 3's ability to provision this service that neither it nor other carriers have to bear. Moreover, outside of Qwest territory in WA, QCC can avail itself of Level 3's single interconnection network architecture with Verizon, AT&T, and BST and so realize the benefits of using a single network out of region but forcing Level 3 to use two networks within Qwest region.

In order to prepare Level 3's network for termination of traditional Long Distance service (*i.e.* the provision of exchange access service) according to Qwest's contract proposals, one must first understand that this is a live and operating network. No carrier can simply turn off one trunk while waiting to turn on another. Rather, a carrier must build duplicate capacity so that the switch is from one live and operating network to another live an operating network. Once that's accomplished, the first network – here Level 3's interconnection network – is shut down. This process is known in the industry as "build and kill."

Before employing a "build and kill" approach, a carrier must ensure that on both sides of the network sufficient switch and trunk capacity exists to allow the "build" portion. This is because more capacity is needed during the build portion than during the earlier or later portion because two networks must remain operating.

b. Facility Costs of Network Changeover

i. Level 3 would require additional switch capacity to employ Build and Kill to meet quality of service commitments and ensure sound engineering of a network switchover.

In Level 3's case, it turns out that there is not enough switch capacity on our network to support even a conservative build and kill approach. This is because the network is engineered to support existing traffic loads plus reasonable growth, but not double that amount. But were we to build only 50% capacity, switch the traffic to FGD, and kill the interconnection network – thus employing an incremental approach- there is still not enough switch capacity to handle it. Moreover, our network engineers are not comfortable with anything less than a 50% overlap for service quality reasons. But in order to achieve that overlap, Level 3 would require two additional Lucent APX 8100 Media Gateways, which would provide 16,000 additional switch ports. The capital cost for these two Media Gateways is **<begin confidential>**********<end confidential>**. This does not include time, materials, network engineering, power and other collocation costs incurred to bring these devices into operation.

ii. Transitioning Level 3's Network from LIS to FGD

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With the Media Gateways in place we then have to go to Qwest's FCC #1 tariff to get the Monthly Recurring Cost for FGD trunks. These cost are made up of a number of elements that must be added together to get to a total cost. Again this is the cost for the network itself not the cost of actually exchanging traffic. Except where noted, costs are determined according to Qwest's FCC-tariffed charges. Confidential Exhibit __, attached, contains the circuit facility assignments for Level 3's entire interconnection network in Washington. According to our most recent network inventory, there are **<begin confidential>** ******* **<end confidential>** interconnection trunks (DS-0 circuits) between Level 3 and Qwest in the state of Washington today. But because of the way Level 3's network has been engineered over time, the total number of DS-1 circuits supports slightly more than the total number of active DS-0 circuits.

<begin confidential>

i. DS3 Entrance Facilities
   - Installation charges for activating FGD trunks to replace Level 3's existing interconnection network with Qwest in Washington total $*********
   - Monthly charges are $*********; over the two-year term of the agreement, this equals $*********

ii. DS-3 Multiplexing
   - $*********per month; over the two-year term of the agreement this equals $*********.

iii. Direct Trunk Transport – fixed elements
   - $*********per month, over the two-year term of the agreement this equals $*********

iv. Direct Trunk Transport – mileage elements
   - $********* per month; over the two-year term of the agreement this equals $*********.

v. End Office Ports
   - $********* per month; over the two-year term of the agreement this equals $*********.

vi. Tandem Office Ports
   - $********* per month; over the two-year term of the agreement this equals $*********.

vii. Disconnect Charges per DS1 - Qwest Washington SGAT
   - $89.24 per DS-1; Disconnecting the ********* DS1s in place today between Qwest and Level 3 this equals $*********

viii. Level 3 Personnel

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- Man hours equivalent to 5 experienced network technicians working full time over a 4-month period to complete this project: $70.00 per hour times 40-hour work-week, times 16 weeks times 5 equals $224,000.

ix. Per MOU Charges

- Based upon historic traffic flows between Qwest and Level 3 and projecting based upon expected trends, I've estimated that over the life of the agreement the parties would exchange **********minutes of ISP-bound traffic. If that traffic is rated at $0.0007 per mou, Qwest would owe Level 3 $**********million dollars. If the traffic were rated as originating access, as Qwest could claim if Level 3 did not implement a retail PRI network (recall none of Level 3's customers are located within the state of Washington), Level 3 would owe Qwest $********** (**********minutes times Qwest's interstate access rate, "Local Switching 2", from Section 6.8.1 of their FCC Tariff No. 1 of $0.001974 per MOU).**<end confidential>**

The total costs, using industry-standard "build and kill" approach to reconfigure Level 3's interconnection network, including non-recurring costs of doing so and the monthly of operating under Qwest's approach over the two-year life of the Interconnection Agreement is $8,014,848.56 for the term of the agreement exclusive of the charges Qwest would impose for the traffic passed via this network over the 2-year term of the agreement.

c. Additional Costs of Network Changeover

i. Uncertainty/Quality Exposure:

In addition what is not clear to Level 3 is how dialup users could continue to access their Internet service without dialing 1+ a 10-digit telephone number. This is because, to the best of Level 3's knowledge, the FDG trunks are not configured to accept originating local traffic. At a more granular level, the LRNs – Local Routing Numbers – that Level 3 and Qwest use for routing of local traffic that is exchanged over interconnection networks, do not work in conjunction with FGD trunks. What Qwest says in their response to Bench Request No. 2 at Attachment A, is that the FGD trunks are provided to CLECs to use for connection to IXCs. But Level 3 is a LEC, not an IXC. Moreover, Qwest says in that response that "CLECs" can use FGD for IXC traffic, but doing so requires the use of Carrier Identification Codes – CIC codes. These codes are required for 1+ dialed long distance call origination because without them the originating switch cannot direct a long distance call to the appropriate third party interexchange carrier. But no carrier uses CIC codes for the exchange of locally-dialed traffic (*i.e.* the end user did not dial 1+, but instead dialed a 7- or 10-digit telephone number) that they would exchange directly with another carrier. Moreover, CIC codes are not implicated at all for purposes of routing when Level 3 terminates traditional IXC traffic to Qwest because in that case, Level 3 already knows where to route the calls based upon the called number. And in that case Level 3 would route calls to Qwest customers directly to the Qwest switches serving the called Qwest customers. In the terminating situation, therefore, CIC codes are irrelevant to the routing from Level 3's network to Qwest's network and ultimately to Qwest's end users. Again, Level 3 terminates traditional IXC traffic to Verizon in Washington today over Level 3's interconnection

trunks with Verizon throughout the state. This arrangement is technically feasible, it works, and Verizon's access bills are paid just as they would be were a FGD trunk configuration in place.

ii. Single FGD Network does not remedy call-rating issues.

Moreover, regardless of whether Level 3 adopts a FDG configuration, neither Level 3's VoIP traffic nor its ISP-bound traffic would be eligible for reciprocal compensation at $0.0007 per MOU under Qwest's terms. This is because under Qwest's contract proposals, even where Level 3 employs a FGD network, VoIP traffic would still be rated as long distance because Level 3's customer would not have a "physical presence" or "VoIP PoP" in the local calling area. "Presence", under Qwest's plan, means that Level 3 either requires its customers to collocate unnecessary equipment in every local calling area or purchase retail Primary Rate Service from Qwest. The former option is demonstratively impossible, but the latter is no better. Under that option – purchase of PRS from Qwest – Level 3's entire interconnection network would remain useless. This is because, as Qwest admitted, services provided by Qwest would remain entirely on Qwest's network. Thus, for any VoIP or ISP-bound traffic that Level 3 exchanges over a FGD network Level 3 would either pay additional access charges or not be permitted to use it at all. And regardless of the effect on VoIP traffic, it is still unclear under Qwest's proposals how end user customers in Washington could reach the Internet via ISPs providing dialup Internet services were Level 3 to employ a FGD network architecture without having to dial 1+ a ten-digit telephone number. This shift in the economic model and its underlying assumptions for telecommunications traffic in Washington would lead to imposition of greater costs on carriers and customers – along with a decline in investment in the sector. Lastly, nothing about an FDG network architecture changes the basic fact that VoIP calls are geographically indeterminate. Qwest's solution, therefore, is a problem in search of a cure.

d. Foregone Market Opportunity

The Long Distance Industry operates on very thin margins.[1] As a general rule, based upon my more than decade's experience serving carriers, including Qwest and Level 3, I can say that on average, Long Distance gross margins range from 5% to 15%. Most analysts calculate the margin as a percentage of the retail, or tariffed switched access rates. Looking at Washington, we can fairly assume that when Qwest reports the total of its access charges, these figures address all local lines served by Qwest in the state. Thus, if we take Qwest's total state access charges – originating and terminating access, we obtain a reasonably accurate representation of the total size of the Washington exchange access market within Qwest territory.

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[1] For example, some of Qwest's financial problems are attributed to the difficulties of making money in the long distance business: "The local business is a pretty solid business," said Robert Konefal, a managing director at Moody's. "The long-distance part of the business is consuming capital and is not delivering returns on that capital." – Comments from Moody's when they cut bonds issued by Qwest and its subsidiary, Qwest Capital Funding, to Ba2 from Baa3, otherwise known as "junk" status. *See* *http://news.com.com/Moodys+cuts+Qwest+to+junk+bond+status/2100-1033_3-929211.html*

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Based upon Qwest's responses to Level 3 discovery Request Numbers ____ Qwest collects approximately **<begin confidential>** $********* **<end confidential>** in access charges from other carriers per year.[2]

In order to understand how Qwest's opposition to Level 3's request to provide exchange access services via Level 3's interconnection network in Washington impact Level 3's ability to compete, it is necessary to understand a bit about how traditional Long Distance ("LD") markets operate. More specifically, it is important to understand how wholesale LD markets operate. Companies in wholesale LD markets look at the revenue opportunity versus numbers of subscribers or lines. This is because in the wholesale space a company is serving carriers across an entire market rather than specific customers. In so doing, a basic and immutable element of the cost structure is Qwest's terminating access charges. These charges are tariffed. They cannot change. Accordingly, every wholesale long distance company that competes to offer termination services to Qwest Land Line End Users will have to pay Qwest Switched Access to terminate the call. A carrier seeking to provide competitive exchange access services, such as Level 3, therefore, must be able to find a way to offer terminating exchange access services on terms more attractive than could QCC.

In order to offer terminating exchange access services on terms equivalent to or more attractive than could QCC, a competing provider must find ways to lower the overall costs of the service. This is usually done by aggregating vast amounts of traffic and by charging only very little above the tariffed access rates – typically 5-15%. The margins range towards the lower numbers because terminating exchange access is an extremely price sensitive service. Any IXC can purchase exchange access or self-provision it. So the prices have to be very close to costs.

So in order to understand the market impact of Qwest's proposals on Level 3, we will start without changing Level 3's network to an FGD network. Rather, we will simply calculate what the size of the exchange access market starting with Qwest's total yearly access charges of **<begin confidential>** *$*********<**end confidential**>* as the amount of revenue they collected for Switched Access in 2005 and assume, conservatively, that approximately 40% of that is attributable to wholesale termination services, and further assume that the tariffed termination rate plus 15% is a competitive price, then the total wholesale exchange access market within Qwest territory in the state of Washington is **<begin confidential>** *********<**end confidential**> for wholesale carriers.

With this estimate of the size of the market, assume that Level 3 sets a goal of capturing a 10% market share. In my experience, new entrants have to offer lower prices in order to attract business. In order to offer lower prices but still remain in business, therefore, Level 3 must

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[2] The total amounts of Qwest access charges were calculated by examining Qwest's supplemental responses to Level 3's Discovery Request Numbers 6 and 9. Specifically the amounts were contained in Excel Spreadsheets attached to responses Qwest provided as confidential information labeled as "Exhibit A" to each of those responses, which were provided to Level 3 as supplemental responses on May 9, 2006. But in both cases, I limited my analysis to the terminating access market. Thus I did not include the total minutes of use for originating access, but did include the total facilities charges as carriers would purchase exchange access facilities where they provide originating access services, terminating access services, or both. That is how the total figure for the termination of long distance traffic in this analysis.

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lower its cost structure sufficiently to make up for its costs of providing the service and enough to earn a return on the investment. In order to win market share, therefore, let's assume that Level 3 sets its prices at 10% above tariffed terminating access. Based upon my prior calculations, 10% of the Washington Exchange Access market within Qwest territory amounts to share would equal **<begin confidential>** $**********<**end confidential**> Subtracting from that number amounts made in payment of Qwest's terminating access charges and the costs of Level 3's network as it is operated today, what remains is very small profit opportunity of approximately **<begin confidential>** *$*********<**end confidential**> So the margins in that business are extremely thin.

If however, we add to Level 3's cost structure the cost of implementing Qwest's requirements that, there is no question that Level 3 could not serve this market at all.